

A New Ogcocephalid Fish, *Dibranchus japonicus*, from Japan

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Abstract A new ogcocephalid fish, *Dibranchus japonicus*, is described from deep waters around Japan. The species differs from other members of the genus in having a toothless vomer and palatine, spines moderately developed on the body, a circular disk, blackish body and fins without any blotches, in addition to some proportional measurements. This new species is the first discovery of a member of the genus *Dibranchus* from Japanese waters.

During investigations of deep sea fishes found in the waters around Japan, six specimens of the genus *Dibranchus* Peters, 1876, were captured by trawl from 620~1270 m deep off the Pacific coast of northern Japan and near Miyake Island, southern Japan. Thereafter, two undescribed specimens of the genus, collected by the Albatross from the deep sea off southern Japan in 1906, were borrowed from the U. S. National Museum of Natural History (information from Dr. Bradbury).

The genus *Dibranchus* is characteristically an inhabitant of deeper waters, having a body coloration of very dark shades in almost all species. Fifteen species are known in this genus from various localities of the world (Bradbury, 1967).

The present specimens clearly differ from all the described species of *Dibranchus* in having a toothless vomer and palatine, and spines moderately developed on the body. They further differ in the shape of the disk, in body and fin pigmentation and in some proportional measurements. In the present paper, it is shown that these specimens represent a new species as described below.

Measurements follow Hubbs (1958) except for the following. Head length, from the tip of snout to the anterior margin of gill opening; disk length, from the tip of snout to the tip of subopercular spine; eye diameter, the diameter of cornea; snout length, from the tip of snout to the anterior margin of cornea; predorsal length, from the tip of snout to the origin of dorsal fin; postdorsal length, from the origin of dorsal fin

to caudal base; preanal length, from the tip of snout to the origin of anal fin; postanal length, from the origin of anal fin to caudal base; preanus length, from the tip of lower jaw to anus; body depth, measured at the posterior margin of skull; body width, widest part of the caudal region; tail width, measured at the origin of anal fin; pectoral and pelvic fin lengths, from the base of longest ray to its tip. Vertebrae were counted from radiographs. Counts and terms of cephalic lateral line patterns follow Bradbury (1967). Specimens used in this study are preserved in the Laboratory of Marine Zoology, Hokkaido University (HUMZ); Department of Biology, Faculty of Sciences, Kochi University (BSKU); and U. S. National Museum of Natural History (USNM).

Dibranchus japonicus, sp. nov.

(New Japanese name: Soko-gutsu)

(Figs. 1~3)

Holotype. HUMZ 78198, 39°40'N, 142°28.4'E, off Iwate Prefecture, 1180~1230 m deep, September 23, 1978, caught by Kyoyo-Mar II.

Paratypes. HUMZ 72663 and HUMZ 72664, 38°02'N, 142°29'E, off Miyagi Prefecture, 1150~1100 m deep, February 7, 1978, caught by Hatsue-Mar II. BSKU 20233, 34°05.0'N, 140°03.7'E, near Miyake Island, 1250~1270 m deep, June 20, 1972, caught by Soyo-Mar II. BSKU 20383, 35°11.4'N, 139°28.8'E, near Miyake Island, 805 m deep, July 12, 1968, caught by Soyo-Mar II. BSKU 19552, 34°32.5'N, 139°39.4'E, near Miyake Island, 620~

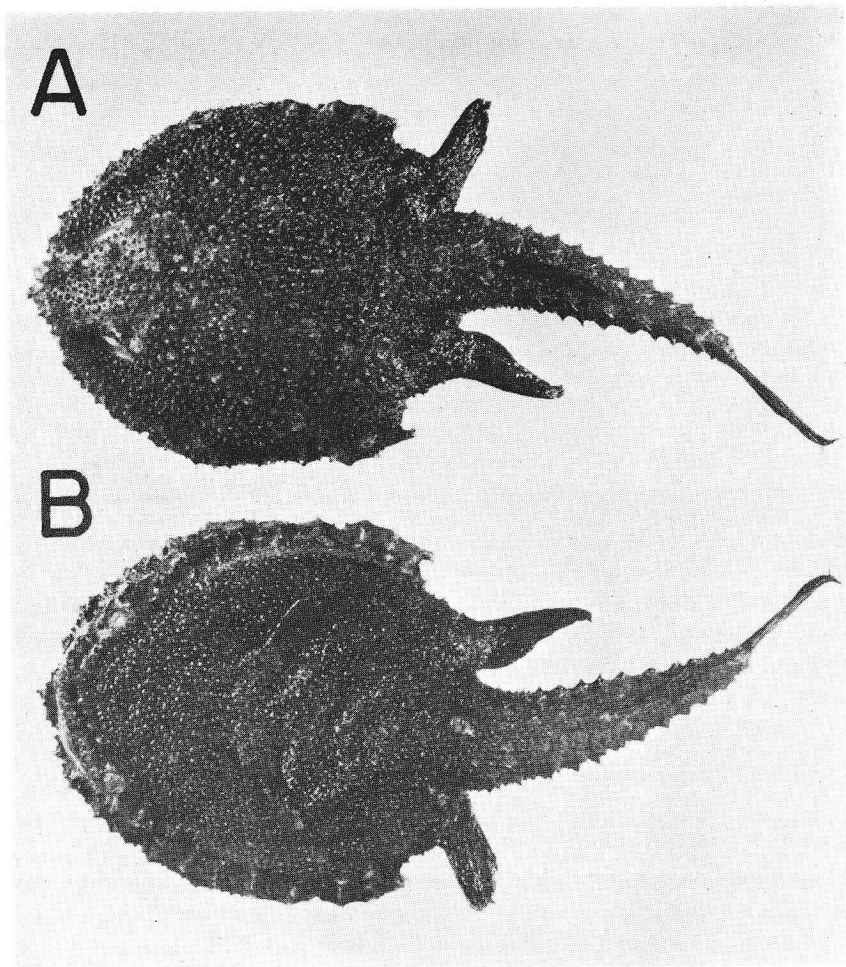


Fig. 1. *Dibranchius japonicus*, holotype, HUMZ 78198, 117 mm SL, from off Iwate Prefecture, Pacific coast of northern Japan.

700 m deep, December 13, 1964, caught by Soyo-Mar II. USNM 148533, 33°24.15'N, 135°30.30'E, off Wakayama Prefecture, 1098 m deep, August 30, 1906, caught by Albatross. USNM 135673, 33°23.30'N, 135°34'E, off Wakayama Prefecture, 1188 m deep, August 30, 1906, caught by Albatross.

Diagnosis. A species of *Dibranchius* differing from all described species of the genus in having the following combination of characters: Body disk nearly circular, its length about equal to width; spines on body, including ventral surface, moderately developed and numerous; snout extending beyond jaws; vomer and palatine toothless; first gill arch with 0+4~5 gill rakers;

pectoral and caudal fins short, 4.6~5.9 and 3.8~4.6 in SL, respectively; body coloration blackish brown; all fins completely black.

Description of holotype and paratypes. Counts and proportions of holotype and paratypes are shown in Table 1.

Disk nearly circular in dorsal view, its width about equal to head; greatest depth of disk about 1/3 of head, located at posterior margin of skull; tail more or less depressed, its width a little more than height; snout rounded, somewhat projecting beyond jaws, its length a little less than interorbital width; eye hollowed, elliptical; horizontal eye diameter about half of vertical diameter; interorbital region convex with a slight

Table 1. Counts and proportional measurements of holotype and paratypes of *Dibranchius japonicus*, sp. nov.

Catalogue number	Holotype			Paratypes				
	HUMZ 78198	HUMZ 72663	HUMZ 72664	BSKU 20233	BSKU 20383	BSKU 19552	USNM 148533	USNM 135673
Standard length (mm)	117	104	106	144	135	112	133	46
Counts								
Dorsal fin rays	6	5	6	6	6	6	6	6
Anal fin rays	4	4	4	4	4	4	4	4
Caudal fin rays	9	9	9	9	9	9	9	9
Pectoral fin rays	14	14	14	14	14	15	14	13
Pelvic fin rays	5	5	5	5	5	5	5	5
Vertebrae	20	20	20	20	20	19	20	20
Neuromasts in:								
Lateral line	12	9	—	10	11	12	8	10
Mandibular series	10	10	—	10	10	10	10	8
Cheek series	8	8	—	8	8	8	8	8
Preopercular series	2	2	—	2	2	2	2	2
Subopercular series								
(submargin+branch)	8+3	8+3	—	8+3	9+3	9+3	8+3	8+?
Premaxillary series	1	1	—	1	1	1	1	1
Supraorbital series	3	4	—	4	4	2	4	2
Supratemporal series	0	0	—	0	0	0	0	0
Proportional measurements in SL								
Head length	1.8	1.8	1.8	1.9	1.8	1.8	1.9	1.9
Disk length	1.7	1.7	1.7	1.8	1.8	1.6	1.7	1.6
Predorsal length	1.5	1.5	1.5	1.6	1.5	1.5	1.5	1.6
Preanal length	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Postdorsal length	2.9	2.8	2.7	2.9	3.0	2.9	2.8	3.0
Postanal length	4.2	4.4	4.3	4.1	4.3	4.3	4.5	4.4
Body width	7.6	7.2	6.9	7.6	7.9	8.0	7.5	7.8
Tail width	9.9	9.3	10.4	12.0	11.2	9.4	11.1	11.8
Pectoral fin length	4.9	5.1	5.9	5.3	5.4	5.1	4.6	4.6
Pelvic fin length	6.7	7.2	7.9	7.2	7.9	6.6	6.3	7.7
Caudal fin length	4.2	4.0	4.6	4.3	4.2	4.1	3.8	4.1
Dorsal fin length	6.0	5.6	6.2	6.3	6.1	5.6	5.5	4.6
Anal fin length	6.3	6.7	5.6	6.3	6.3	6.2	5.7	5.4
Upper jaw length	7.6	7.8	7.8	7.6	7.5	8.0	8.9	7.5
Mouth width	4.6	4.9	4.6	4.4	4.7	4.6	5.3	4.8
Eye diameter	14.3	14.9	14.5	15.2	15.3	14.9	14.9	11.5
Interorbital width	9.5	11.1	9.2	8.9	10.8	11.0	10.2	9.2
Snout length	8.7	8.4	8.6	8.5	8.4	8.7	8.3	9.2
Depth of caudal peduncle	18.7	17.1	18.9	16.0	19.0	16.2	16.6	15.9

concave area from snout to anterior region of eye, its width about 2 times of horizontal diameter of eye; esca situated in deep triangular illicial cavity, trilobe in shape (Fig. 3A, B); two nostrils located on each side of illicial cavity.

Dorsal surface of disk thickly covered with numerous small spinules, some enlarged, more or less cuspid spines with striated broad bases;

spinules sparsely scattered on snout and disk, somewhat regularly arranged in a row along skull margin above orbit, and in three rows along disk margin and submargin; spines of uppermost row along disk margin directed upwards, those of middle row more or less directed backwards and those of lowermost downwards (Fig. 2A, B); other prominent spines on tail region forming

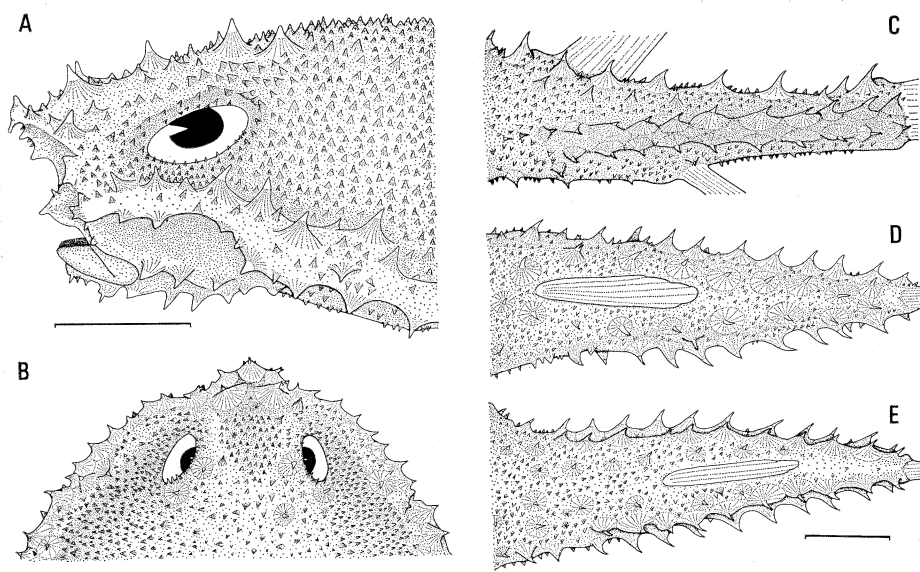


Fig. 2. *Dibranchius japonicus*, holotype, HUMZ 78198, 117 mm SL, showing condition of spines. A: Lateral view of head. B: Dorsal view of head. C: Lateral view of caudal region. D: Dorsal view of caudal region. E: Ventral view of caudal region. Scales indicate 10 mm.

three distinct rows, 8 (7~8 in paratypes) in uppermost row counted from just before dorsal origin, 13 (12~13) in mediolateral row counted from anus, 12 (10~12) in sublateral row counted from anus (Fig. 2C~E); dorsal surface of pectoral fin base with some noticeable spines; ventral surface of disk and tail densely covered with smaller spinules than dorsal ones.

Lateral line running from rear of pectoral base to caudal base; neuromasts setting along shallow groove between mediolateral and sublateral

spines, and covered with palmated flaps. Cephalic lateral lines running along margin and submargin of disk, and having neuromasts covered with tiny palmated flaps.

Subopercular spine strongly protruding, bearing 5 obvious spines at tip, one of these directed upwards, three backwards, and one forwards (Fig. 3C).

Gills 2; gill rakers on first arch small, knob-like in shape, with many small spinules on their distal half; branchiostegals 6, first ray strongest.

Villiform teeth in a band on jaws; tongue with a pair of villiform-toothed, elliptical plates.

Dorsal origin about midway from top of occiput to base of caudal fin, longest ray 3.4 (2.5~3.4 in paratypes) in head; dorsal fin base long, about equal to horizontal eye diameter; anal origin midway from anus to base of caudal fin, longest ray 3.5 (2.7~3.7) in head; anal fin base short, about equal to vertical eye diameter; caudal fin rounded, longest among all fins, its length 2.4 (2~2.3) in head; pectoral fin moderate in size, about 2.7 (2.4~3.1) times of horizontal eye diameter; pelvic fin originating midway from tip of lower jaw to anus, its length about equal to snout length.

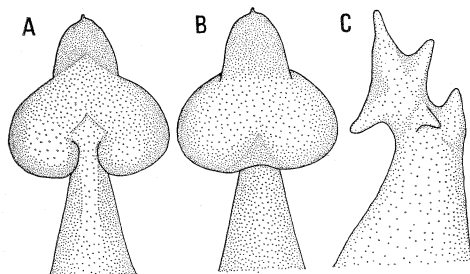


Fig. 3. *Dibranchius japonicus*, holotype, HUMZ 78198, 117 mm SL. A: Dorsal view of esca. B: Ventral view of esca. C: Dorsal view of left subopercular spine.

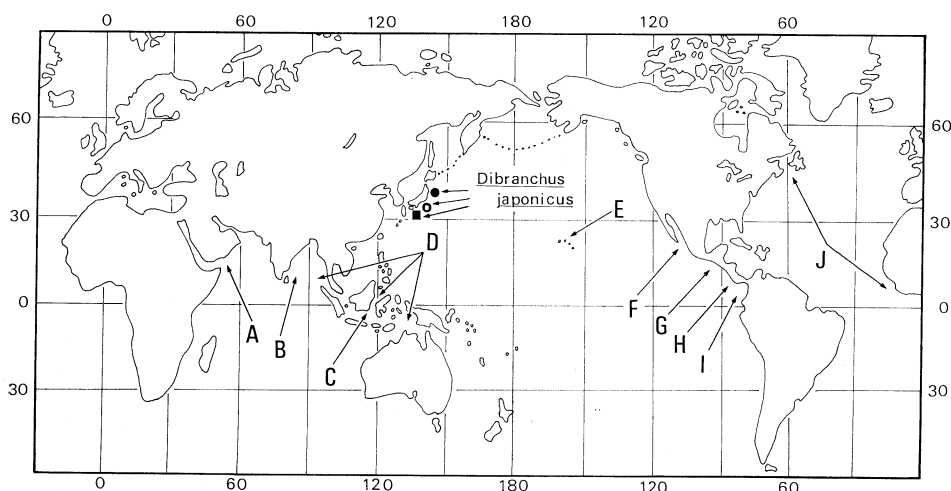


Fig. 4. Localities where eight specimens of the present new species, *Dibranchius japonicus*, were caught, and known distributions of all species of *Dibranchius*. Solid circle, off Iwate and Miyagi Prefectures; open circle, near Miyake Island; square, off Wakayama Prefecture; A, *D. obscurus*; B, *D. nudiventer*; C, *D. infranudus*; D, *D. nasutus*; E, *D. erythrinus*, *D. stellulatus*; F, *D. scaber*; G, *D. spongiosa*; H, *D. hystryx*; I, *D. asper*, *D. erinacea*, *D. nudivomer*, *D. sparsa*, *D. spinosa*; J, *D. atlanticus*.

Coloration in fresh condition, in diagnosis; oral, gill cavities and peritoneum blackish.

In alcohol, body hue becoming somewhat lighter, especially on body surface; dorsal surface of two lateral lobes of esca reddish-brown, median lobe pure black; ventral surface of esca uniformly dark; palmated flaps in groove pure black.

Distribution. Pacific coast of Japan, at depths of 620~1270 m (Fig. 4).

Remarks. Bradbury (1967), in her revision of the Ogcocephalidae, recognized fifteen species of *Dibranchius*, and since that time, no additional species have been described. Eight of these fifteen species are known from the eastern Pacific Ocean: *D. scaber* Garman, 1899, *D. nudivomer* (Garman, 1899), *D. sparsa* (Garman, 1899), *D. erinacea* (Garman, 1899), *D. spinosa* (Garman, 1899), *D. hystryx* Garman, 1899, *D. asper* Garman, 1899, and *D. spongiosa* (Gilbert, 1890), and two species are from Hawaiian waters: *D. erythrinus* Gilbert, 1905 and *D. stellulatus* Gilbert, 1905. The remaining five species are from the following localities: *D. infranudus* Beaufort and Briggs, 1962, from the Flores Sea; *D. nudiventer* Lloyd, 1909, from the Bay of Bengal; *D. nasutus* Alcock, 1891 (in Wood-

Mason and Alcock, 1891), from the Arabian Sea; *D. obscurus* Brauer, 1908, from the Gulf of Aden; and *D. atlanticus* Peters, 1876, from both sides of the Atlantic Ocean (Fig. 4).

Dibranchius japonicus differs from *D. nudivomer*, *D. sparsa*, *D. erinacea*, and *D. spinosa* in having a toothless vomer and palatine, and from *D. erythrinus* and *D. stellulatus* in having a toothed tongue. It is separable from *D. nudiventer* and *D. infranudus* in having spines on the ventral surface of the disk and caudal region, and from *D. hystryx* in the distinctly smaller spines on the body and disk margin. It differs from *D. spongiosa* in shape of the disk, it being subpentangular and truncate in front anteriorly in the latter species, but nearly circular and somewhat pointed anteriorly in front in *D. japonicus*.

The present species can be also distinguished from *D. asper* by the long snout clearly extending beyond jaws (short snout does not extend beyond jaws in *D. asper*), and somewhat smaller eyes 1.3~1.7 in interorbital width (about 1.0).

The Arabian species *D. nasutus* has longer pectoral fins, 3.4 in standard length as against 4.6~5.9 in the present species, a longer predorsal length, 1.4 in standard length as against 1.5~1.6, and a longer caudal fin 3.0 in standard

length as against 3.8~4.6.

The present species differs from *D. obscurus* also in some proportions; smaller eyes, 7.6~8.5 in head as against 5.1 in *D. obscurus*, and narrower interorbital space 4.7~6.2 in head as against 1.5.

Further, the present species is different from *D. atlanticus* in the following: the blackish body and fins in the former (body having various shades of grey-brown with a pinkish tinge, and fins ranging from white to a brilliant rose red in the latter), the large tubercles on body without small spinules (according to personal communications with Dr. Bradbury, some small spinules occurring on the larger tubercles), longer upper jaw, 7.5~8.9 in standard length (11.1) and shorter pectoral fin, 4.6~5.9 in standard length (4.2).

Dibranchius japonicus appears to be most closely related to *D. scaber*. These two species are similar in general appearance, shape of the disk, monotonous coloration, and many proportions. It is easily separated from the latter, however, in having the body more densely covered with spinules, the presence of 0+4~5 gill rakers on the first arch (as against no gill rakers in the latter), and blackish body and fins (instead of reddish or purplish in the latter). Furthermore, *D. japonicus* appears to have a larger number of small spinules on the head than *D. scaber* (based on a comparison of a paratype of *D. japonicus*, HUMZ 72663, with the lectotype of *D. scaber*, MCZ 28274, made by William L. Fink, Museum of Comparative Zoology, Harvard University); there are approximately 50 spinules in a hollow area below the eye in *D. japonicus*, as against 16 in *D. scaber*, and about 45 spinules in a hollow on the snout in *D. japonicus*, as against 13 in *D. scaber*.

The fishes of the genus *Dibranchius* live, for the most part, in tropical latitudes in waters near the equator. *D. atlanticus*, however, inhabits waters of more or less high latitudes of the Atlantic Ocean (Goode and Bean, 1895; Riss, 1963). *D. japonicus* is rare in appearing in the more northern seas of the Indo-Pacific Ocean; it is the first appearance of the genus *Dibranchius* in Japanese waters (Fig. 4).

Acknowledgments

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日本近海から得られたアカグツ科魚類の1新種ソコグツ *Dibranchus japonicus*

尼岡邦夫・豊島 貢

東北地方沖, 三宅島近海及び潮ノ岬沖の水深 620~1270 m から得られた アカグツ 科 ソコグツ 属 (新称) *Dibranchus* に属する 8 個体の標本を調査した. 本属には世界の各地から 15 種類が知られている. この 8 個体は体盤がほとんど円形で, 長さと同幅がほぼ等しいこと, 体の腹面にも小棘が密生すること, 吻が両顎を越えて突出すること, 鋤骨と口蓋骨に歯がないこと, 第 1 鰓弓の鰓耙が 0+4~5 であること, 腹鰭と尾鰭が短いこと, 及び体は黒褐色で, 各鰭が完全に黒色であることなどの形質で, 他種と明瞭に区別される. 本属魚類はインド・太平洋では主として赤道海域に分布している. 日本からはソコグツ属魚類として本種が最初の記録である.

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